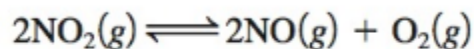


CHEM 101B Chapter 12 Equilibrium – The Equilibrium Constant

29. The following equilibrium pressures at a certain temperature were observed for the reaction



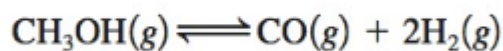
$$P_{\text{NO}_2} = 0.55 \text{ atm}$$

$$P_{\text{NO}} = 6.5 \times 10^{-5} \text{ atm}$$

$$P_{\text{O}_2} = 4.5 \times 10^{-5} \text{ atm}$$

Calculate the value for the equilibrium constant K_p at this temperature.

31. At 327°C, the equilibrium concentrations are $[\text{CH}_3\text{OH}] = 0.15 \text{ M}$, $[\text{CO}] = 0.24 \text{ M}$, and $[\text{H}_2] = 1.1 \text{ M}$ for the reaction



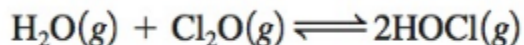
Calculate K_p at this temperature.

38. In a study of the reaction



at 1200 K it was observed that when the equilibrium partial pressure of water vapor is 15.0 torr, the total pressure at equilibrium is 36.3 torr. Calculate the value of K_p for this reaction at 1200 K. (*Hint:* Apply Dalton's law of partial pressures.)

39. The equilibrium constant is 0.0900 at 25°C for the reaction



For which of the following sets of conditions is the system at equilibrium? For those that are not at equilibrium, in which direction will the system shift?

- A 1.0-L flask contains 1.0 mole of HOCl, 0.10 mole of Cl_2O , and 0.10 mole of H_2O .
- A 2.0-L flask contains 0.084 mole of HOCl, 0.080 mole of Cl_2O , and 0.98 mole of H_2O .
- A 3.0-L flask contains 0.25 mole of HOCl, 0.0010 mole of Cl_2O , and 0.56 mole of H_2O .